

ADEMCO**No. 997****CEILING-MOUNTED****PASSIVE INFRARED MOTION DETECTOR**

MARGIN LINES INDICATE PRINCIPAL CHANGES IN THIS ISSUE

INSTALLATION INSTRUCTIONS**GENERAL INFORMATION**

This passive infrared motion detector is a ceiling-mounted unit employing a 360°, 31-zone Fresnel lens* and offering an efficient protection pattern for commercial and residential applications. The detector senses sudden and slight changes in temperature within the area of detection; thus, when an intruder crosses or enters any zone, the resulting change in infrared energy is detected for alarm reporting. Best coverage will be obtained if the PIR is mounted such that the likely direction of intruder motion is in the direction shown in Figure 1.

The Detector features installer-selectable Alternate Polarity Pulse Count, which provides protection against false alarms, and an LED enable/disable feature (installer-selectable).

INSTALLATION HINTS:

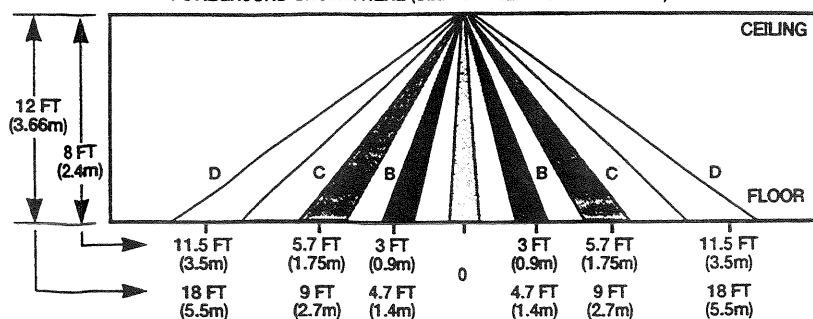
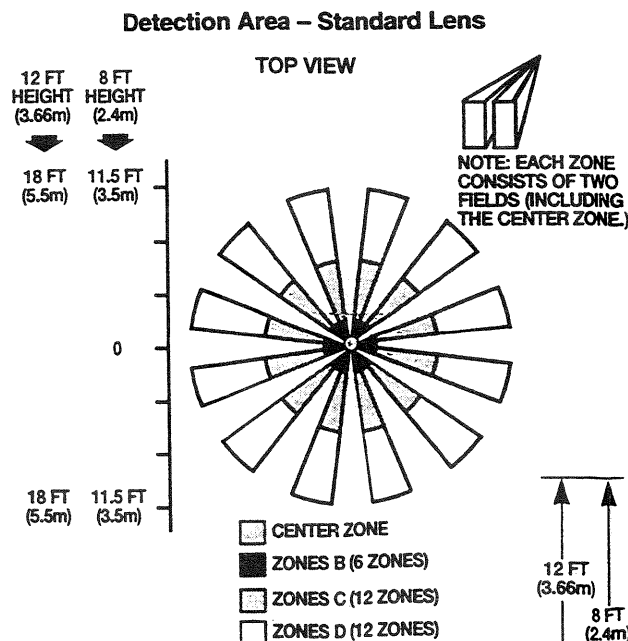
- Do not install where the detector is exposed to direct sunlight or directly above strong sources of heat.
- Make sure the detection area does not have obstructions (curtains, screens, large pieces of furniture, plants, etc.) which may block the pattern of coverage.
- Avoid locating a detector in areas which contain objects likely to produce a rapid change in temperature, such as central heating, radiators or ducts (or heaters of any kind), air conditioners, open flame, etc.
- Do not mount on an unstable surface.

Important: Avoid running alarm wiring close to heavy-duty electrical power cables.

PROTECTION PATTERNS

The PIR's protection pattern with the standard lens is shown below.

Note: An optional, easily-changed, 34-zone lens (No. 997WD) is available (outside of the U.S.A. only) that will provide greater coverage when needed (see *INTER-CHANGEABLE OPTIONAL LENS*).

**SPECIFICATIONS****Detection**

Method: Passive Infrared.

Coverage:

With Standard Lens:

23-ft (7m) diameter @ 8 ft (2.4m) height,
11.5-ft (3.5m) radius.

36-ft (11m) diameter @ 12-ft (3.7m) height,
18-ft (5.5m) radius.

With Optional Lens:

44-ft (13.4m) diameter @ 8-ft height,
22-ft (6.7m) radius.

55-ft (16.76m) diameter @ 10-ft (3.1m) height,
27.5-ft (8.4m) radius.

Pulse Count:

1- or 2-event, installer-selectable.

Detectable

Walk Rate: 0.5 – 5ft/sec (0.15 – 1.5m/sec).

Indicator:

Red LED with enable/disable feature.

Mounting**Height:**

12-ft (3.7m) maximum for standard lens,
10-ft (3.1m) maximum for optional lens.

Voltage:

12 VDC nominal (voltage reversal makes PIR inoperative).

Alarm Relay:

SPST, Form A, 0.5A max. contact rating @
30VDC. Reed relay, 15 ohm protective resistor.

Current Drain:

17 mA.

Standby**Capability:**

Power source should be capable of at least 4
hours of battery standby.

Operating**Temperature:**

32°F – 122°F (0°F – 50°C).

Operating**Humidity:**

Up to 95% RH (max), non-condensing.

Dimensions:

3-1/2" (89mm) diameter x 1" (25.4mm) high.

INSTALLING AND WIRING THE PIR

The ceiling on which the PIR is to be mounted must be firm and vibration-free.

1. **Select a location** that will provide the coverage desired from the lens in use. Wiring (from the control, etc.) to be connected to the PIR should be brought to this location. The ceiling wiring hole should be no more than 5/16" (8mm) in diameter.
2. **Remove the cover** from the PIR by pressing it in gently and turning it counterclockwise (to the left).
3. **Break out one of the two knockouts** that have been provided for wire access (see Fig. 3), and pass the wires into the base of the PIR. *Caution: Be certain that wires do not obstruct the detector's field of view.*
4. **Connect all wires** to the screw terminals (see Fig. 3 for wiring details). Seal all openings in the base with foam or RTV (not supplied) to prevent drafts or insects from entering the unit.
5. For walk test purposes, initially set the LED to "on" (jumper removed), and set Pulse Count "off" (jumper removed).
6. **Mount the PIR base** to the ceiling with two screws, using the screw holes provided in the base of the PIR.

Important Note: Optimum mounting orientation is shown in Figure 1. Mount the PIR in such a manner that the likely path of an intruder is in the direction shown. This will ensure maximum effectiveness of the Alternate Polarity feature.

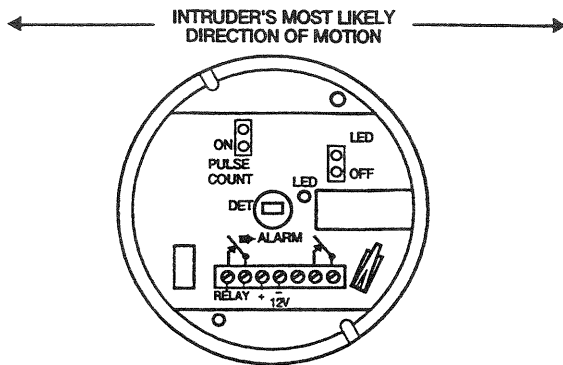


Figure 1. Optimum Mounting Orientation

LED ENABLE/DISABLE

The detector is shipped with the Alarm LED disabled (LED enable/disable plug in place). The LED should be enabled (for a walk-test) by removing the LED enable/disable plug (see Fig. 3 for location). To prevent the loss of the plug, we suggest you install it on one pin when the plug is not in use. When the walk-test is completed, the LED may be disabled, if desired (plug in place).

The LED may also be controlled from a remote location, as follows:

Remove the LED enable/disable plug. Connect a switched line to the upper pin (#1) of the two LED pins which can be grounded or opened (see Fig. 2). Grounding pin #1 will disable the LED, disconnecting it from ground will enable the LED.

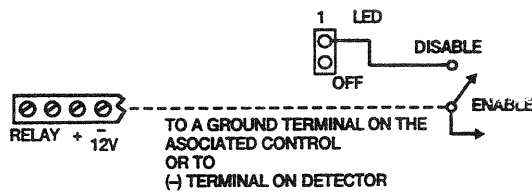
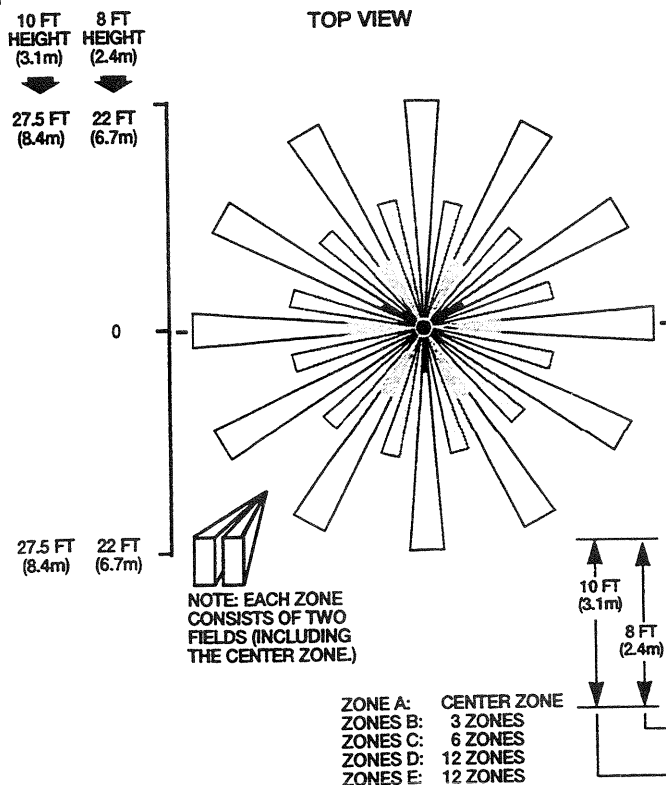


Figure 2. Remote Control of LED

DETECTION AREA – OPTIONAL 997WD LENS (Lens available only outside of the U.S.A.)



TAMPER SWITCH

This PIR is equipped with a cover tamper switch. With cover on, the switch is closed; when cover is removed, the switch opens. The tamper terminals (see Fig. 3) should be connected to the control panel's tamper loop.

PULSE COUNT OPTION

Each detector includes Pulse Count circuitry that is designed to provide stability in adverse environments to minimize false alarms. Two-event pulse count is provided by positioning the jumper plug across the pulse count pins (see Fig. 3 for location). To select one-event pulse count (instant response), remove the jumper plug. When programmed for 2-event pulse count, the detector will signal an alarm within 3 or 4 steps, since the processing logic requires more complex motion than just a momentary event. When the detector verifies an intrusion, the LED will light and the alarm relay contacts will transfer, both conditions lasting for approximately 1 to 3 seconds (dependent upon signal strength).

To prevent the loss of the plug, we suggest you install it on one pin when the plug is not in use.

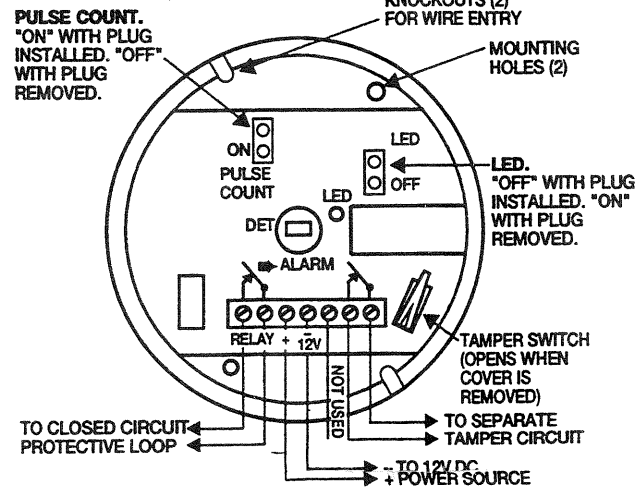


Figure 3. PC Board (in base of PIR)

ACCESSING PC BOARD AFTER PIR IS MOUNTED

To enable or disable the alarm LED, or Pulse Count, you will need to access the PC board located in the PIR. Remove the cover from the PIR by pressing it in gently and turning it counterclockwise (to the left).

To replace the cover, align the tabs on the cover's edge with the notches on the base's rim, press the cover gently in and turn it clockwise (to the right).

INTERCHANGEABLE OPTIONAL LENS (997WD) (Available only outside of the U.S.A.)

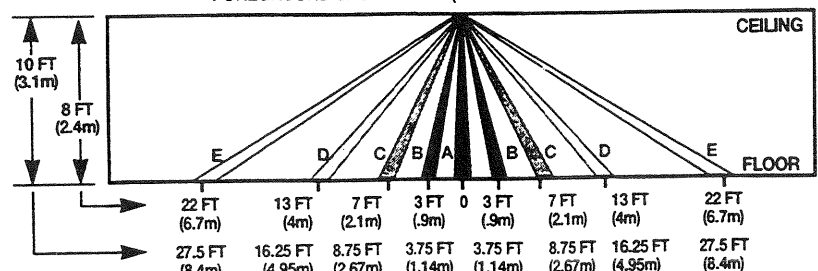
This optional integrated lens/cover (where it is available) may be used to provide greater coverage for the 997.

Changing Lenses

Remove the existing cover on the PIR and replace it with the new No. 997WD cover (which is equipped with the optional lens). After changing lenses, a walk-test *must* be performed.

SIDE VIEW

NOTE: EVERY ZONE NOT SHOWN. ONLY THOSE ZONES IN FOREGROUND SHOWN HERE (SEE TOP VIEW FOR ALL ZONES)



TEST PROCEDURES

Important: Two-minute warm-up time is required after applying power. Testing should be conducted with the protected area cleared of all people. Disarm the protective system's control during the test procedure to prevent reporting of unwanted alarms.

Walk-Test:

1. Pulse Count in the PIR must be "OFF" (jumper plug removed) to provide instant response. The Alarm LED must be enabled at this time (LED jumper plug removed).
2. With the cover installed on the PIR, walk through the protective zones, observing that the PIR's LED lights whenever motion is detected (the LED serves as a Walk-Test indicator during this procedure).
Note: With pulse count "OFF" (instant), the LED stays lit (and the alarm relay contacts remain open) for approximately 1 to 3 seconds after detecting motion.
3. If pulse count is to be used in this installation, install the pulse count jumper plug on the pulse count pins, and repeat the walk test procedure. With pulse count "ON", the LED serves as an alarm indicator.

The absolute range of all PIR units is subject to variation because of different types of clothing, backgrounds and ambient temperature. For this reason, ensure that the most likely intruder routes are well within the PIR's protective zones and that walk-testing is carried out along these routes.

After the "Walk-Test" is complete, the LED may be disabled if desired (LED enable/disable plug installed).

MAINTAINING PROPER OPERATION:

In order to maintain the detector in proper working condition, it is important that the following be observed by the user.

1. **Power should be provided at all times.** Loss of power to the unit will result in the alarm contacts reverting to an alarm state. The unit's DC source should have standby power available for at least 4 hours of operation during emergencies.
2. **Units should never be relocated** without the advice or assistance of the alarm service company.
3. **The physical surroundings of the protected area should not be changed.** If furniture or stock is moved, or air-conditioning or additional heating is installed, the system may have to be readjusted by the alarm service company.
4. **Walk-tests should be conducted frequently (at least weekly)** to confirm continued proper coverage by each detector.

TROUBLESHOOTING

INTERMITTENT ALARM (LED OPERATIVE)

Probable Causes:

- A. Rapid temperature change. Check for electric or gas heaters, open flames, electric arcs, etc..
Remedy: Locate source and reposition detector if necessary.
- B. Drafts causing drapes, light fixtures, display material to move.
Remedy: Eliminate source of motion.

INTERMITTENT OR CONTINUOUS ALARM

Probable Causes:

- A. DC voltage supplied to detector is inadequate, intermittent, or polarity reversed.
Remedy: Ensure that proper polarity and adequate voltage is supplied and that wiring is intact (no opens or shorts) and connections secure.
- B. Protective loop is interrupted (open).
Remedy: Determine whether interruption is in protective loop wiring or at detector's alarm relay contacts. Disconnect protective loop at detector relay contact terminals and check continuity across terminals. If absent at terminals (and proper voltage is supplied to the detector), return unit for service. If present, check protective loop wiring.

LED INOPERATIVE

Probable Causes:

- A. LED enable/disable plug is installed.
Remedy: Remove LED enable/disable plug.
- B. LED malfunction. Check for broken/shorted leads.
Remedy: Return unit for service.

NO ALARM WHEN MOTION TAKES PLACE IN THE PROTECTED AREA (LED DOES NOT LIGHT)

Probable Causes:

- A. Detection area has changed. Possibly due to repositioned furniture or equipment in the protected area.
Remedy: Caution customer about layout changes.

TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any alarm system.

The installer should assume the responsibility of developing and offering a regular maintenance program to the user, as well as acquainting the user with the proper operation and limitations of the alarm system and its component parts. Recommendations must be included for a specific program of frequent testing (at least weekly) to insure the system's operation at all times.

THE LIMITATIONS OF YOUR PASSIVE INFRARED MOTION DETECTOR

While the Passive Infrared Motion Detector is a highly reliable intrusion detection device, it does not offer guaranteed protection against burglary. Any intrusion detection device is subject to compromise or failure to warn for a variety of reasons:

- Passive Infrared Motion Detectors can only detect intrusion within the designed ranges as diagrammed in this installation manual.
- Passive Infrared Motion Detectors do not provide volumetric area protection. They do create multiple beams of protection, and intrusion can only be detected in unobstructed areas covered by those beams.
- Passive Infrared Detectors can not detect motion or intrusion that takes place behind walls, ceilings, floors, closed doors, glass partitions, glass doors, or windows.
- Mechanical tampering, masking, painting or spraying of any material on the lenses, windows or any part of the optical system can reduce the detection ability of the Passive Infrared Motion Detector.
- Passive Infrared Detectors sense changes in temperature; however, as the ambient temperature of the protected area approaches the temperature range of 90° to 105°F (32° to 40°C), the detection performance can decrease.
- This Passive Infrared Detector will not operate without appropriate DC power connected to it, or if the DC power is improperly connected (i.e., reversed polarity connections).
- Passive Infrared Detectors, like other electrical devices, are subject to component failure. Even though this equipment is designed to last as long as 10 years, the electronic components in it could fail at any time.

We have cited some of the most common reasons that a Passive Infrared Motion Detector can fail to catch intrusion. However, this does not imply that these are the only reasons, and therefore it is recommended that weekly testing of this type of unit, in conjunction with weekly testing of the entire alarm system, be performed to ensure that the detectors are working properly.

Installing an alarm system may make the owner eligible for a lower insurance rate, but an alarm system is not a substitute for insurance. Homeowners, property owners and renters should continue to act prudently in protecting themselves and continue to insure their lives and property.

We continue to develop new and improved protection devices. Users of alarm systems owe it to themselves and their loved ones to learn about these developments.

ADEMCO SIX YEAR LIMITED WARRANTY

Alarm Device Manufacturing Company, a Division of Pittway Corporation, and its divisions, subsidiaries and affiliates ("Seller"), 165 Eileen Way, Syosset, New York 11791, warrants this PIR Detector to be in conformance with its own plans and specifications and to be free from defects in materials and workmanship under normal use and service for 72 months from the date stamp control on the product. Seller's obligation shall be limited to replacing, at its option, free of charge for materials or labor, a PIR which is proved not in compliance with Seller's specifications or proves defective in materials or workmanship under normal use and service. Seller shall have no obligation under this Limited Warranty or otherwise if the PIR is altered or improperly repaired or serviced by anyone other than Ademco factory service. In case of defect, return the PIR to Ademco Distribution, Inc. or an authorized Ademco distributor for an immediate replacement.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO CASE SHALL SELLER BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, OR UPON ANY OTHER BASIS OF LIABILITY WHATSOEVER, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

Seller does not represent that its PIR may not be compromised or circumvented; that the PIR will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the PIR will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained alarm may only reduce the risk of a burglary, robbery, fire or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THE PIR FAILED TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PIR, WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER. This warranty replaces any previous warranties and is the only warranty made by Seller on this PIR. No increase or alteration, written or verbal, of the obligations of this Limited Warranty is authorized.



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